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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,926	01/16/2002	Jeffrey R. Sampson	2003309-0027 (Agilent 10	1042
7590	09/21/2006			EXAMINER TUNG, JOYCE
AGILENT TECHNOLOGIES, INC. Legal Department, DL429 Intellectual Property Administration P.O. Box 7599 Loveland, CO 80537-0599			ART UNIT 1637	PAPER NUMBER
DATE MAILED: 09/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/052,926	SAMPSON, JEFFREY R.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Joyce Tung	1637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 July 2006.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-35,67-101 and 144-149 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-35, 67-101 and 144-149 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                 | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                        | Paper No(s)/Mail Date. _____.                                     |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 5) <input type="checkbox"/> Notice of Informal Patent Application |
|   | 6) <input type="checkbox"/> Other: _____.                         |

## **DETAILED ACTION**

The applicant's response filed 7/17/2006 to the Office action has been entered. Claims 1-35, 67-101, and 144-149.

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/17/06 has been entered.
2. The rejection of claims 1-34, 67-100 and 144-147 under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Kool (5,714,320, issued Feb. 3, 1998) is withdrawn because of the argument.
3. The rejection of claims 35 and 101 under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Kool (5,714,320, issued Feb. 3, 1998) as applied to claims 1-34, and 67-100 above, and further in view of Thorp et al. (5,871,918, issued Feb. 16, 1999) is withdrawn because of the argument.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-34, 67-100, and 144-149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Sampson et al. (US 2004/0086880 A1, issued May 6, 2004).

Baldarelli et al. disclose a method for sequencing nucleic acid polymer. The description of the method of Baldarelli et al. as listed in claims 1-24 (See Abstract and column 23-24, claims 1-24). Modified base are available including methylated bases (See column 8, lines 44-45). In order to identify the monomers, condition should be appropriate to avoid secondary structure in the polymer to be sequenced (See column 8, lines 53-54). Baldarellie et al. also disclose sequencing two different oligonucleotide homopolymers (See column 21, lines 55-67). The oligonucleotide homepolymers is interpreted as the sequence with at least one repeat of a nucleotide sequence.

Baldarelli et al. do not disclose the nucleic acid molecule containing modified nucleotides that reduce secondary structure in the nucleic acid molecule, which are modified adenosine, modified thymine, modified guanosine and modified cytosine and the nucleic acid which is enzymatically produced by using a circular template.

Sampson et al. disclose a system to produce modified nucleotides, which reduce the secondary structure in nucleic acid molecule (See [0016] and [0017]). The nucleic acid molecule contains 2-aminoadenosine, 2-thiothymidine, inosine and pyrrolopyrimidine (See [0020]). Modified adenosine is able to form a base pair with unmodified thymine and modified thymine is able to forming a base pair with unmodified adenosine (See [0131]). The nucleic acid molecule contains modified adenosine and modified thymine is not able to form base pairs (See [0130] & [0132]). The nucleic acid molecule contains modified guanosine and modified cytosine is not

able to form base pairs (See [0142]). Modified cytosine is able to form a base pair with unmodified guanosine and modified guanosine is able to form a base pair with unmodified cytosine (See [0144]). Sampson et al. also disclose a method of generating nucleic acid having a reduced ability to hybridize with PCR amplification or rolling circle amplification (See pg. 33, claim 22) in which the template is a single stranded or double stranded or circular form (See pg. 33, claim 23), the modified nucleotides are used (See pg. 34). Nucleic acid molecules with reduced levels of intramolecular base pairing or intermolecular base pairing are produced enzymatically for example, using RNA polymerase or DNA polymerase (See pg. 2, [0018]).

One of ordinary skill in the art would have been motivated to apply the method of Sampson et al. to produce nucleic acid molecules with the modified nucleotide that reduce secondary structure in the nucleic acid molecule because as discloses by Sampson et al. the dNTP forms of these modified nucleotides have been used to reduce sequencing artifacts that result from target and extension product secondary structures (See [0173]). It would have been prima facie obvious to apply the method of Sampson et al. to produce the nucleic acid molecules which contains modified nucleotides that reduce secondary structure in the nucleic acid molecule in which the sequence of the nucleic acid is to be determined.

6. Claims 35 and 101 <sup>are</sup> ~~remain~~ rejected under 35 U.S.C. 103(a) as being unpatentable over Baldarelli et al. (6,015,714, issued Jan. 18, 2000) in view of Sampson et al. (US 2004/0086880 A1, issued May 6, 2004) as applied to claims 1-34, 67-100, and 144-149 above, and further in view of Thorp et al. (5,871,918, issued Feb. 16, 1999).

The references of Baldarelli et al. and Sampson et al. set forth in section 5 above do not disclose analyzing nucleic acid by electron tunneling.

Thorp et al. disclose a method of detecting a nucleic acid by using electron tunneling (See column 9, lines 30-55). The method may be used in a variety of applications, including DNA sequencing (See the Abstract).

One of ordinary skill in the art would have been motivated to modify the method of Baldarelli et al. by applying electron tunneling as taught by Thorp et al. since the electron tunneling is applied to DNA sequencing. It would have been prima facie obvious to apply the electron tunneling to the method of Baldarelli et al. to make the instant invention for sequencing DNA.

### Summary

7. No claims are allowable.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joyce Tung whose telephone number is (571) 272-0790. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joyce Tung  
September 15, 2006

  
KENNETH R. HORLICK, PH.D  
PRIMARY EXAMINER

9/18/06